LENGTH OF STAY AND DRUG COSTS IN

THE AIDS DRUG ASSISTANCE PROGRAM (ADAP)

FEBRUARY 2006

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February 2006

ACKNOWLEDGMENTS

I would like to thank Susan M. Sabatier, Thérèse Ploof, Kathleen Russell, and Biao Xing for providing valuable feedback on this report.

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Suggested Citation
Wong, D.T., *Length of Stay and Drug Costs in the AIDS Drug Assistance Program (ADAP)*. California Department of Health Services, Office of AIDS, 2006.

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EXECUTIVE SUMMARY

Objectives. The purpose of this study was to examine how long clients stay in California's ADAP and access prescription medications along with the associated drug costs. Several measures of length of stay were used to provide a complete picture of this variable. This will help ADAP prepare for the future as HIV/AIDS funding from federal and state government becomes less certain to match program growth.

Design. Historic ADAP client and prescription files from fiscal year (FY) 1997-98 to FY 2003-04 were used for this study. Three measures of length of stay were used:

- Access Method — the total number of months a client accessed prescription drugs over the seven-year period excluding monthly gaps where no prescriptions were received (e.g., if a client received a prescription every single month of FY 1998-99 except for December, one's length of stay would be 11 months);
- Enrollment Method — the time of the client's first enrollment in ADAP to one's last dispense month disregarding any gaps (e.g., if the same client enrolled in ADAP in July 1998 and received one's last prescription in June 1999, one's length of stay would be 12 months); and
- Dispense Method — the length of time between a client's first and last dispense month including any gaps (e.g., using the same client as above, if the first prescription was accessed in July 1998 and the last prescription was accessed in June 1999, one's length of stay would be 12 months. Both the enrollment and dispense methods disregard the gap in December).

Results and Conclusions. Mean length of stay in ADAP over the seven-year study period ranged from 21.5 months (access method) to 32.2 months (enrollment method). Mean length of stay for the dispense method was 28.7 months, indicating that clients did not use ADAP to pay for prescriptions for 7.2 months during the seven-year period when compared with the access method. Most clients (66 percent) received their first prescription within 30 days of their enrollment date demonstrating ADAP's efficiency in serving its client population. Further analysis on access years and access months indicated 28 percent of all clients were enrolled and served for only one year, and ten percent accessed the program for only one month. It was also found that once a client left ADAP, they usually did not come back to the program. The average ADAP cost per client for the seven-year study period was $20,028. The estimated historic cost per client from October 1987 (the program's inception) was $23,315. Future research will examine the possible implementation issues of an ADAP waiting list, why clients leave ADAP, and where they go.

INTRODUCTION

California's ADAP was established in October 1987 within the California Department of Health Services, Office of AIDS (CDHS/OA). The program provides prescription medications to uninsured and underinsured low and moderate-income individuals infected with HIV/AIDS. These Food and Drug Administration-approved drugs are designed to prolong the quality of life, delay the deterioration of health, and prevent and treat opportunistic infections associated with HIV disease.

ADAP, funded through federal dollars under Title II of the Ryan White Comprehensive AIDS Resources Emergency (CARE) Act, State General Fund, and rebate from drug manufacturers, is available throughout California by 61 local health jurisdictions (LHJs). In July 1997, CDHS/OA centralized its ADAP by contracting with a Pharmacy Benefits Manager (PBM)—Ramsell Corporation—to administer parts of its program. The services provided include but are not limited to enrolling clients, maintaining a pharmacy network, processing prescription claims, coordinating drug reimbursement between OA and participating ADAP pharmacies, and implementing quality assurance measures (e.g., reviewing drug utilization patterns among clients).

The PBM contract was renewed with Ramsell Corporation in July 2000, and OA continues to receive its weekly invoice of total drug costs along with supporting client and prescription data from a single reliable source. Prior to centralization, this information was received independently from the individual LHJs. The resulting 61 invoices and data were often difficult to manage by OA, because they were received late and had incomplete data. By contracting with a PBM, OA has increased the efficiency, effectiveness, and impact of ADAP among its key players—clients, pharmacy staff, enrollment workers, and OA ADAP staff.

THE PRESENT STUDY

Over the past 15 years, ADAP's total budget has dramatically increased 2,579 percent from $9,300,000 in FY 1990-91 to $249,311,000 in FY 2004-05 as result of client growth, new drugs added to the formulary, drug price increases, length of stay in the program, and other factors. The vast majority of the budget covers clients' drug costs; approximately one percent goes towards reimbursing local health jurisdictions for costs associated with eligibility screening and enrolling ADAP clients, plus funding for ADAP staff. Reliable client-level data were not available in FY 1990-91, but 28,192 individuals were enrolled and served in FY 2004-05.

Because the program has grown so large over the years, particularly the budget and the number of clients served, the purpose of this study was to examine how long clients stay in California's ADAP and access prescription medications along with the associated drug costs. The study provides more details about how clients use the program over time. Several measures of length of stay were used to provide a complete picture of this variable. This will help ADAP prepare for the future as HIV/AIDS funding from federal and state government becomes less certain to match program growth.

METHOD

ADAP. Historic ADAP client and prescription data files from FY 1997-98 to FY 2003-04 were used for this study. Although ADAP was established in 1987, the most recent seven-year period was selected because it was during this time that ADAP had a centralized program. While the contract began in July 1997, client and prescription data were not received until September 1997. Thus, FY 1997-98 only included ten months of data.

Client variables of interest were as follows:
- Enrollment date (when a client first enrolled in ADAP).
- Gender.
- Race/Ethnicity.
- Date of Birth.

Prescription variables of interest included:
- Total cost per drug.
- First dispense month (when a client accessed a prescription drug).
- Last dispense month.
- Access months per year (number of months a client accessed a drug).
- Each year a client received a drug (coded 1 = yes, and 0 = no).

Dispense Month versus Report Month. ADAP prescription files include two time variables that should be distinguished—dispense month and report month. As indicated above, dispense month refers to the time (month and year format) that a client accessed a formulary drug at an ADAP participating pharmacy while report month refers to the time the prescription claim was paid by ADAP. Because ADAP is the payer of last resort, the search for other payers such as private insurance and Medi-Cal may delay the actual payment of a claim. For example, a client may access a drug in September 2003 but ADAP may not cover the claim until November 2003. For this study, dispense month was used because it would provide a “true” measure of access months and subsequently how long clients stay in the program. For ADAP annual reports, report month is used and would provide comparable but not exact statistics to those in this report.

Current and Continuous Clients. A current client was defined as one who was enrolled and served in FY 2003-04; otherwise, a client was defined as not current. In contrast, a continuous client was defined as one who was enrolled and served in consecutive years with no gaps in treatment years regardless of the number of years; otherwise, a client was defined as not continuous. By default, one-year clients were classified as continuous.

Length of Stay. To present the most complete picture of clients' length of stay in ADAP, three measures were used to compute this variable:

1. Access Method — This measure was computed by summing the total number of months a client accessed prescription drugs over the seven-year period. Thus, gaps in service months when a client did not access a drug were not counted towards the length of stay (e.g., if a client received a prescription every single month of FY 1998-99 except for December, one's length of stay would be 11 months). This method did not consider multiple prescriptions within the same month (e.g., two prescriptions on the same or different dispense dates), but it is an important statistic because access months are directly tied to the ADAP budget. If a client is not accessing a drug within a given month, there is no cost to the program.

2. Enrollment Method — This measure of length of stay was derived from the time of the client's first enrollment in ADAP to one's last dispense month. This is the traditional way for measuring program participation in health services gaps (e.g., if the same client enrolled in ADAP in July 1998 and received one's last prescription in June 1999, one's length of stay would be 12 months). Clients with an enrollment date prior to FY 1997-98 were left censored, or adjusted to September 1997 when reliable data became available. For a non-continuous client, an adjustment was made as in the dispense method described below for non-service years between FY 1997-98 to FY 2003-04.

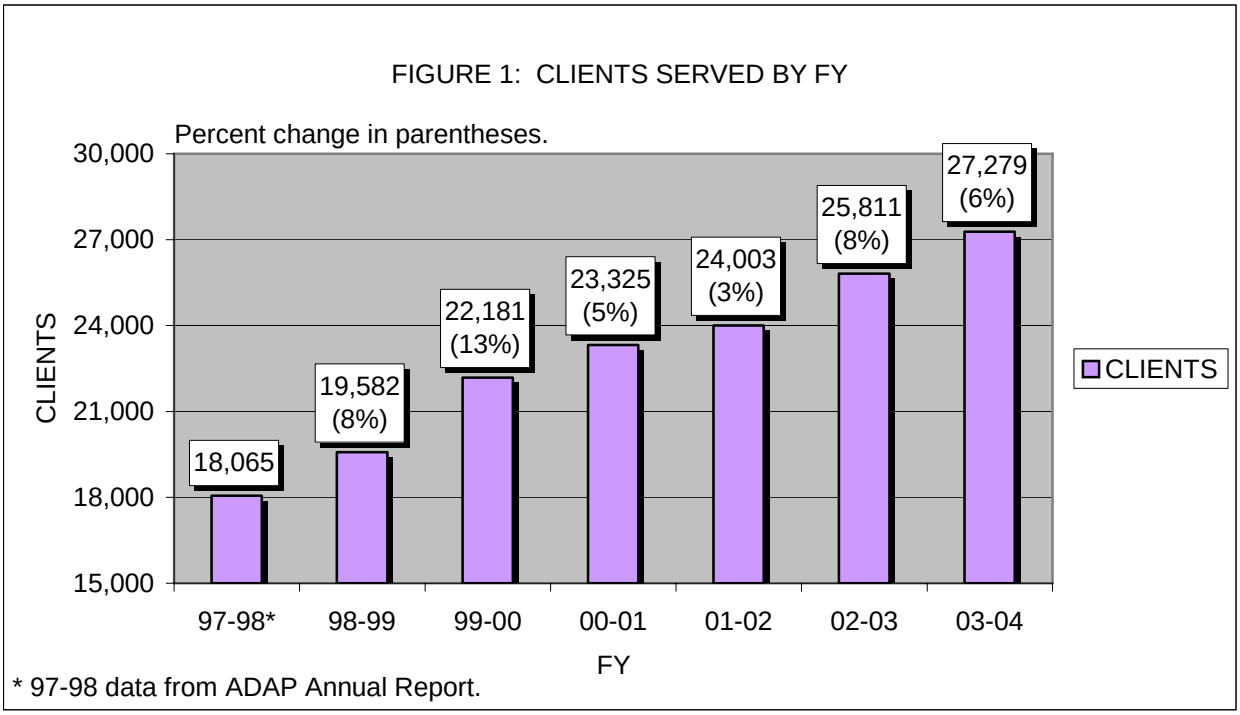
3. Dispense Method — The last measure was defined as the length of time between a client's first and last dispense month adjusting for gaps in years in which a client was not enrolled and served. For example, if a client accessed a prescription in three consecutive years (e.g., FY 1998-99, FY 1999-00, and FY 2000-01), the maximum length of stay was 36 months (first dispense month = July 1998 and last dispense month = June 2001). If a client accessed a prescription in two non-consecutive years (e.g., FY 1998-99 and FY 2000-01), the maximum length of stay would be 24 months with a 12-month adjustment for not being enrolled and served in FY 1999-00 (same first and last dispense month above minus 12 months). Unlike the access method, the dispense and enrollment methods include gaps in service years rather than months. Thus, the dispense and enrollment methods assume a client is continuously enrolled in the program as long as one prescription is accessed during the year.

While each method has its strength and weaknesses, the access method has the most practical value to ADAP, whereas, the enrollment method is the conventional way to track program length of stay. The dispense method was included to determine how much time it took before an ADAP client enrolled in the program and accessed one's first prescription. As indicated above, more that one measure of length of stay was used to identify client participation in ADAP.

RESULTS

Annual Data. First, historic ADAP files were analyzed by FY in terms of the following: 1) total number of clients enrolled and served; 2) total number of prescriptions accessed by clients; 3) average number of prescription access months per client; 4) total drug costs for all clients; and 5) average cost per client.

Figure 1 shows the number of clients served by FY. Annual growth increased an average of 1,536 clients or seven percent per year from FY 1997-98 to FY 2003-04. The largest annual increase—2,599 clients or 13 percent—occurred in FY 1999-00. Total client growth increased by 9,214 clients or 51 percent over the seven-year period.

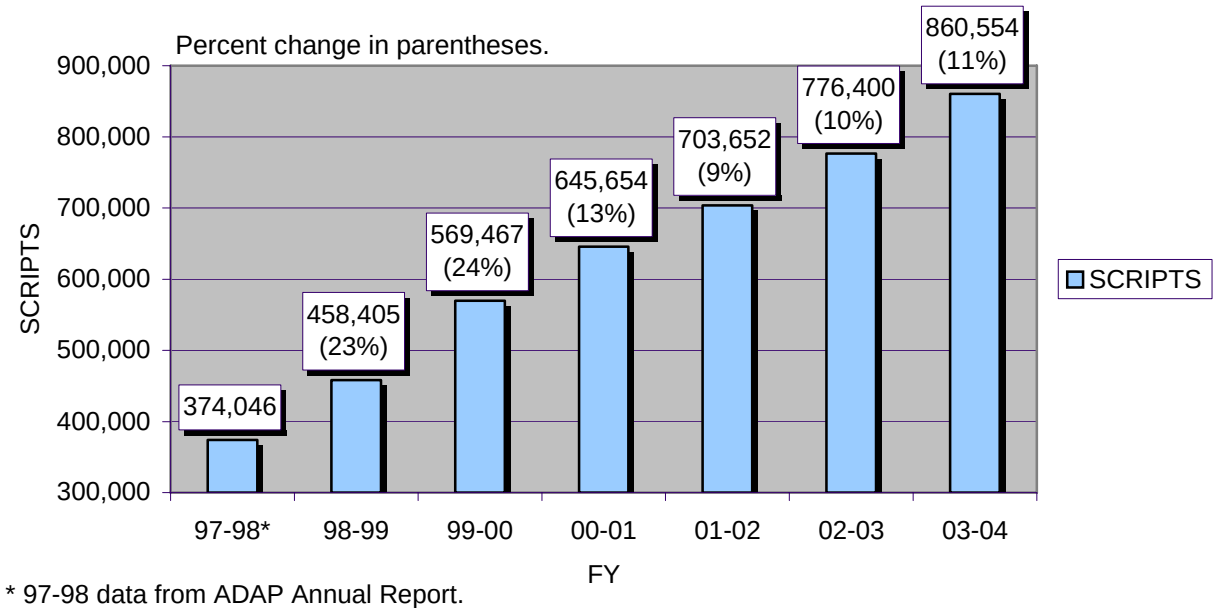


Source: CDHS/OA

The number of prescriptions accessed by FY is shown in Figure 2. Prescriptions accessed increased an average of 81,085 prescriptions or 15 percent per year over the seven-year period. As with client growth, the largest increase per year—111,062 prescriptions or 24 percent—occurred in FY 1999-00. Total prescriptions accessed increased by 486,508 prescriptions or 130 percent over the seven-year period.

Figure 3 shows the average number of access months per client by FY. Annual access months increased an average of 0.3 months or five percent per year. Unlike client and prescription growth, the largest annual increase—1.1 months or 19 percent—occurred in FY 1998-99. Without this data point, the average increase in access months is less than three percent per year. Total access months increased 1.9 months or 33 percent from FY 1997-98 to FY 2003-04.

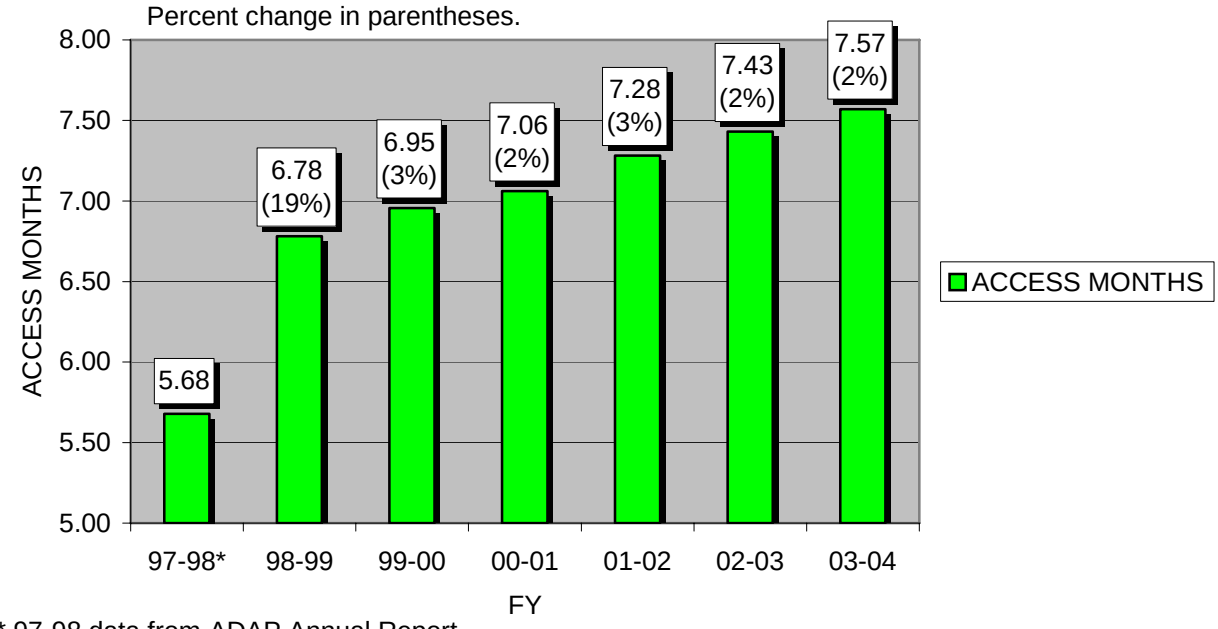
FIGURE 2: PRESCRIPTIONS ACCESSED BY FY



* 97-98 data from ADAP Annual Report.

Source: CDHS/OA

FIGURE 3: AVERAGE ACCESS MONTHS BY FY

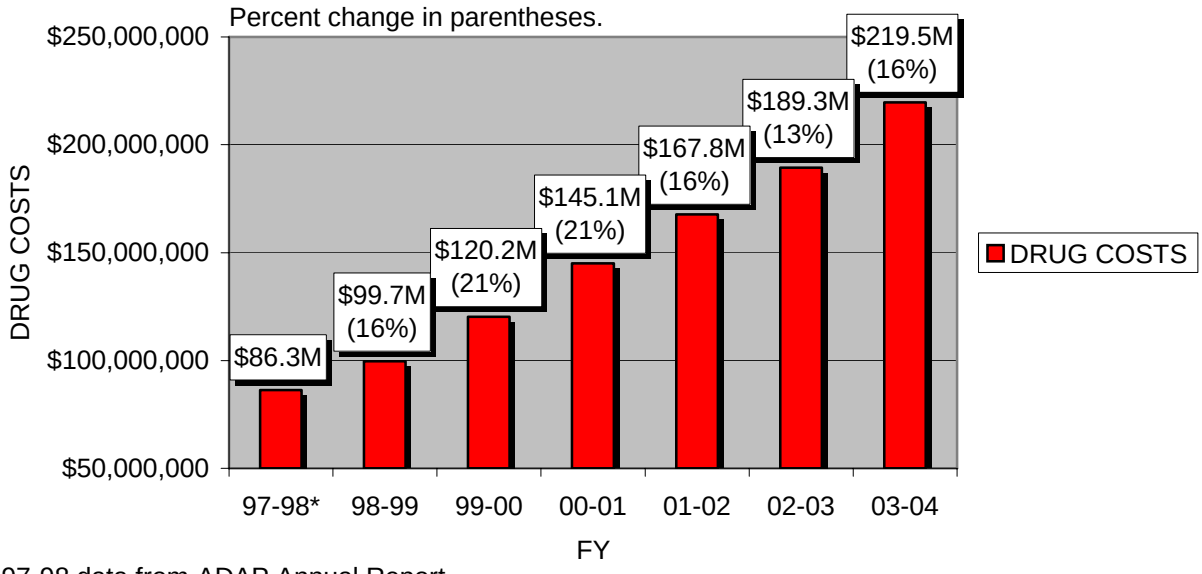


* 97-98 data from ADAP Annual Report.

Source: CDHS/OA

Perhaps the most critical statistic to ADAP is the total drug costs by FY, which appears in Figure 4. The actual budget also included relatively minimal expenditures for LHJ administration and ADAP staff support services, but these costs were excluded here. Drug costs increased an average of $22.2 million or 17 percent per year. Unlike the previous statistics, the largest increase per year needed to be defined in two ways because of the magnitude of the drug costs: 1) The largest annual dollar increase was $30.2 million (16 percent) between FY 2002-03 and FY 2003-04; and 2) the largest annual percent increase was 21 percent ($24.9 million) between FY 1999-00 and FY 2000-01, which exceeded the previous year by a small fraction. Total drug costs increased by $133.3 million or 154 percent over the seven-year period.

FIGURE 4: DRUG COSTS BY FY

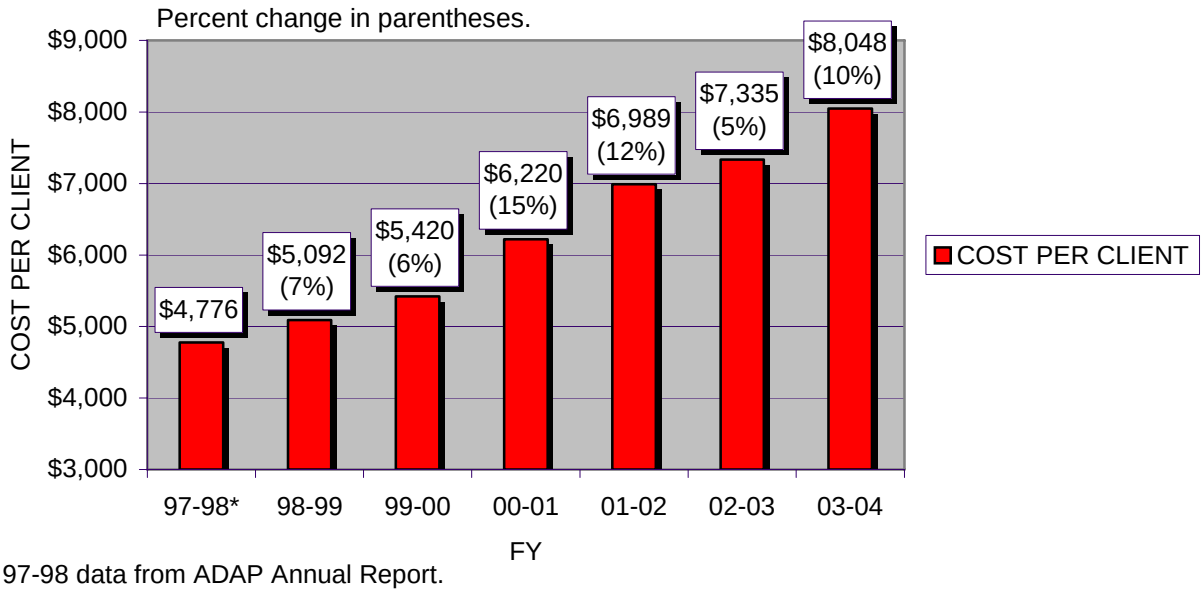


* 97-98 data from ADAP Annual Report.

Source: CDHS/OA

The average annual cost per client by FY is shown in Figure 5. This statistic was computed by dividing the drug costs by the clients enrolled and served. Annual average cost per client increased by $545 or nine percent over the seven-year period. The largest annual dollar and percent increase was $800 or 15 percent in FY 2000-01. Total annual cost per client increased by $3,272 or 69 percent over the seven-year period.

FIGURE 5: AVERAGE ANNUAL COST PER CLIENT BY FY

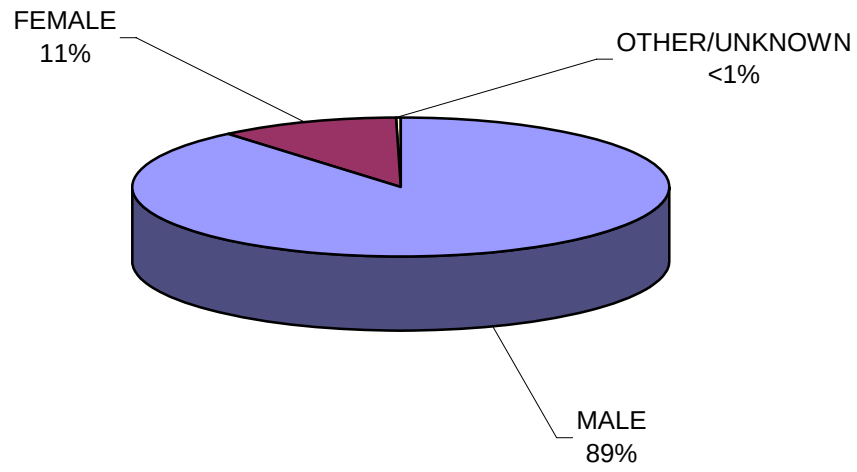


* 97-98 data from ADAP Annual Report.

Source: CDHS/OA

Aggregate Data. Next, the historic annual ADAP client and prescription files were aggregated to obtain unique client-level data. From FY 1997-98 to FY 2003-04, ADAP enrolled and served 51,325 individual clients. When broken out by gender, 89 percent were male, 11 percent were female, and less than 1 percent were other or unknown (See Figure 6).

FIGURE 6: UNIQUE CLIENTS BY GENDER, FY 1997-98 TO FY 2003-04

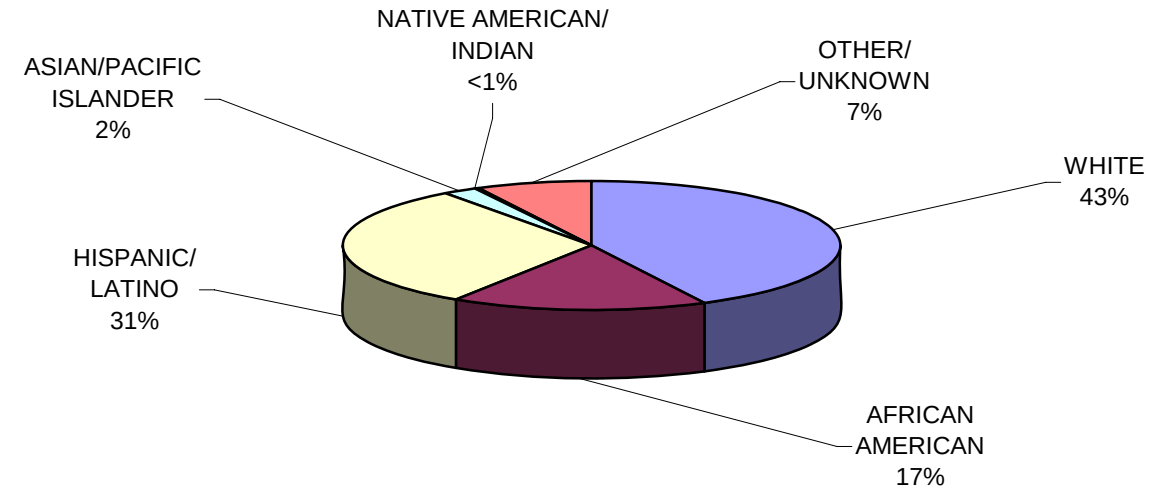


N = 51,325

Source: CDHS/OA

For race/ethnicity, 43 percent of all clients were White, 17 percent were African American, and 31 percent were Hispanic/Latino. Of the remaining ten percent, two percent were Asian/Pacific Islander, less than one percent were Native American/Indian, and seven percent were other or unknown (see Figure 7).

FIGURE 7: UNIQUE CLIENTS BY RACE/ETHNICITY, FY 1997-98 TO FY 2003-04

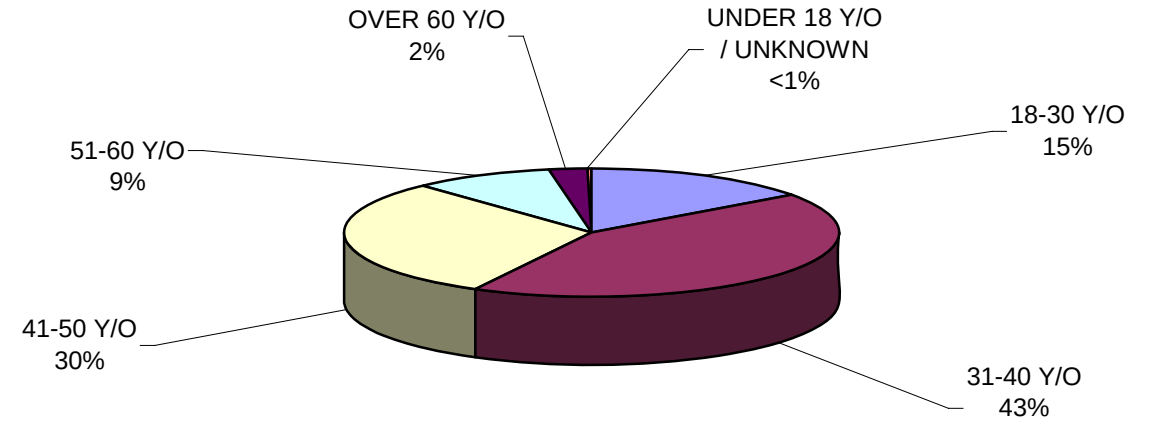


N = 51,325

Source: CDHS/OA

When broken out by age group, 15 percent of all clients were 18-30 years old, 43 percent were 31-40 years old, 30 percent were 41-50 years old, 9 percent were over 60 years old, and less than 1 percent were under 18 years old or unknown (see Figure 8). Overall, the aggregate or unique client-level data were similar to annual ADAP demographic data (not shown).

FIGURE 8: UNIQUE CLIENTS BY AGE GROUP, FY 1997-98 TO FY 2003-04



N = 51,325

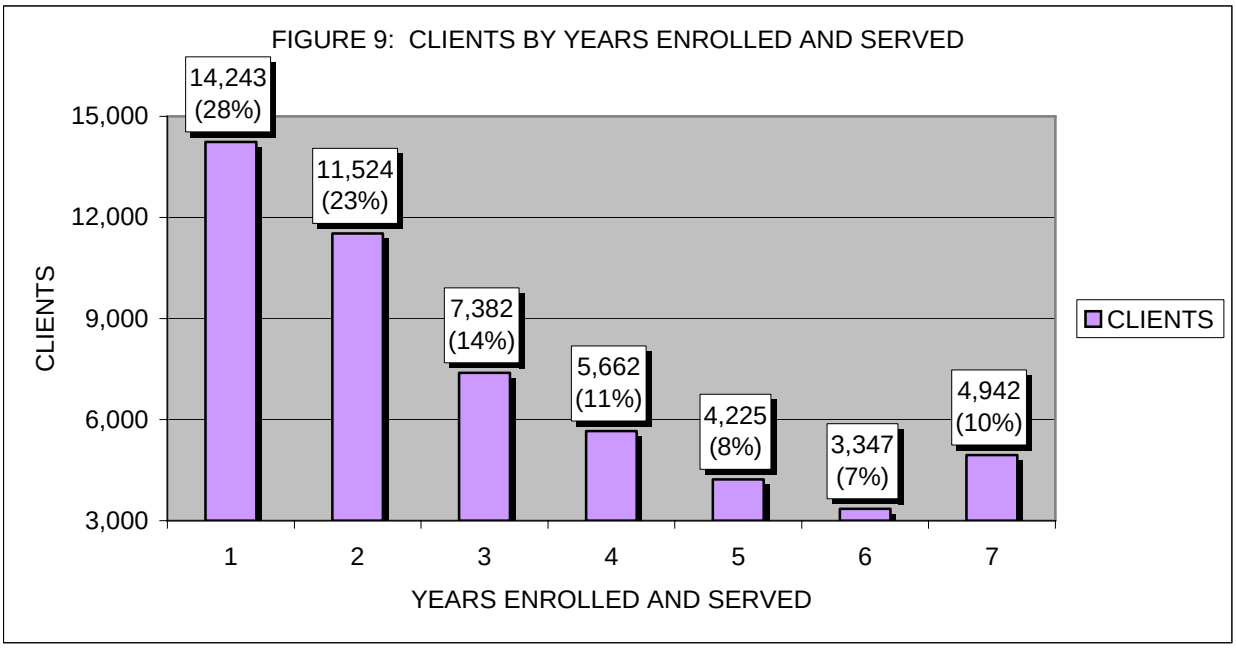
Source: CDHS/OA

Descriptive statistics (totals and averages) were also computed for the unique client population.[1] Over the seven-year period, 51,325 clients were enrolled and served whom:

- Accessed a total of 4,014,132 prescriptions, or 78.2 prescriptions per client;
- Had an average (i.e., mean) of 21.5 prescription access months (out of 82, adjusting for FY 1997-98) with a standard deviation of 21.1 and a median of 13.0 access months;[2] AND
- Totaled over $1 billion ($1,027,923,437) in drug costs, or $20,028 in average cost per client.

Access Years and Access Months. Prior to determining clients' length of stay in ADAP, the number of years the clients were enrolled and served was examined. As shown in Figure 9, 4,942 clients (ten percent) accessed a prescription in all seven years from FY 1997-98 to FY 2003-04. Overall, more clients were associated with less service years in ADAP. That is, 14,243 clients (28 percent) were enrolled for one year with prescription services, 11,524 clients (23 percent) had two years, 7,382 clients (14 percent) had three years, 5,662 clients (11 percent) had four years, 4,225 clients (8 percent) had five years, and 3,347 clients (7 percent) had six years.

FIGURE 9: CLIENTS BY YEARS ENROLLED AND SERVED



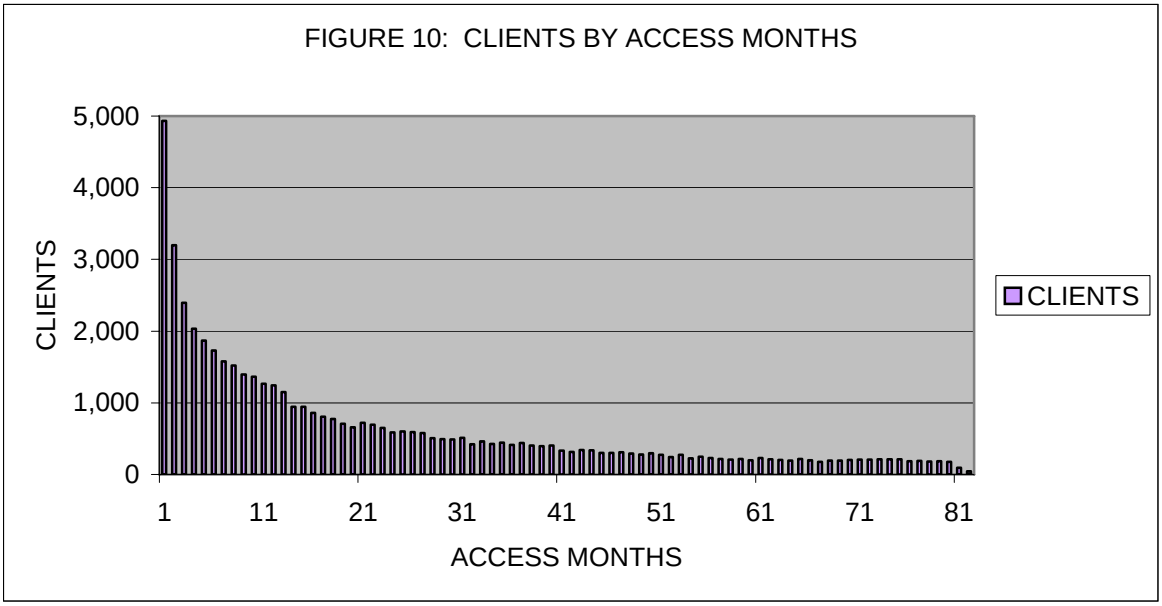
Source: CDHS/OA

These results were further examined by looking at the individual number of access months per client. As shown in Figure 10, the pattern of results is similar to that of

[1] With the exception of access months, all statistics were adjusted for FY 1997-98 by using ADAP Annual Report data for a full-year's worth of data.
[2] Since the mean was larger than the median, this indicated that the data were skewed to the right or a disproportionate amount of values were at the lower end of the scale.

clients' enrollment and service years. A reverse J-shaped curve was found indicating that more clients had fewer access months. For example, the largest number and percentage of clients—4,932 of all clients (ten percent)—accessed prescriptions for only one month. Approximately, one in five clients had between one to three access months (10,523 clients or 21 percent). Also, 24,534 clients (48 percent) had 12 access months or less. It should be noted that these months need not be consecutive, which explains the discrepancy when compared to clients with one year of enrollment and services. Coupled with the enrolled and served data, these findings show that most ADAP clients were in the program for a short period of time—12 months or less.

FIGURE 10: CLIENTS BY ACCESS MONTHS



Source: CDHS/OA

Current By Continuous Clients. Table 1 shows a two-way classification of the number of current clients by continuous clients. Of the 51,325 clients, overall, 27,279 (53 percent) were classified as current or enrolled and served in FY 2003-04 (see Figure 1). The remaining 24,046 clients (47 percent) were classified as not current. Overall, 46,216 clients (90 percent) were classified as continuous or had no gaps between service years and 5,109 (10 percent) were classified as not continuous.

Within the current clients, 23,821 (87 percent) were classified as continuous—the largest single category—while 3,458 (13 percent) were classified as not continuous. Within the not current or past clients, 22,395 (93 percent) were classified as continuous while 1,651 or (7 percent) were classified as not continuous.

TABLE 1: CURRENT BY CONTINUOUS CLIENTS, FY 1997-98 TO FY 2003-04

CONTINUOUS	CURRENT		TOTAL
	YES	NO	
YES	23,821	22,395	46,216
NO	3,458	1,651	5,109
TOTAL	**27,279**	**24,046**	**51,325**

Source: CDHS/OA

Of the 5,109 non-continuous clients, 4,856 clients (95 percent) had one gap between enrollment and service years. The gap may be one, two, or more years as long as it was consecutive years of no prescription access. For example, a client enrolled and served only in FY 1997-98 and FY 1999-00 or only in FY 1997-98 and FY 2000-01 would meet this criteria.

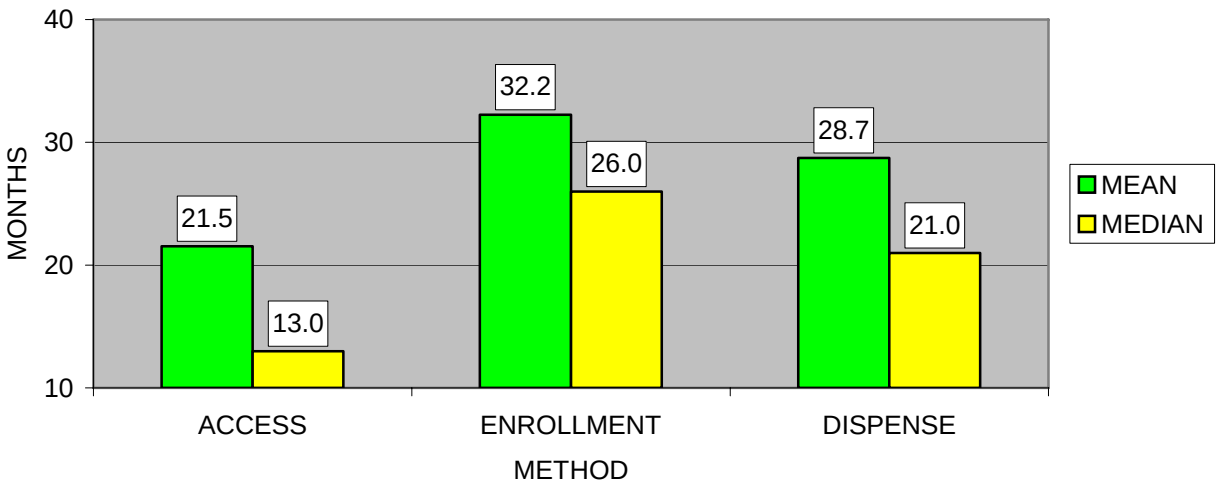
For the remaining non-continuous clients, 251 clients or five percent had two gaps between enrollment and service years (e.g., only in FY 1997-98, FY 1999-00, and FY 2001-02), and 2 clients or less than one percent had three gaps in service.

Length of Stay. Figure 11 shows the various measures of length of stay in ADAP.[3] The access method—the total amount of months a client accessed a prescription— yielded the shortest stay in the program (mean = 21.5 months and median = 13.0). These statistics indicated that over the seven-year period, clients used ADAP prescription services only a mean of one year and ten months but nearly 50 percent of all clients contributed one year (median). The dispense method—based on the time difference between a client's first and last prescription—resulted in a longer length of stay (mean = 28.7 and median = 21.0). Thus, clients' mean stay was nearly two years and six months in the program, with 50 percent of all clients staying on ADAP for one year and nine months.

When left censoring all clients who enrolled prior to September 1997, or adjusting for potential gaps in service years between enrollment and FY 1997-98, the mean length of stay using the enrollment method was 32.2 months with a median of 26.0. Such results indicate that clients did not use ADAP to pay for prescriptions for 10.7 months during the seven-year period when compared with the access method. The mean time difference between a client's enrollment date and first dispense month was 1.6 months. However, the median time difference was 0.0 months indicating that approximately 66 percent of all clients received their first prescription within 30 days of their enrollment date.

[3] Last dispense months prior to enrollment dates (i.e., data entry errors) and missing dates were excluded from these analyses.

FIGURE 11: VARIOUS MEASURES OF LENGTH OF STAY



Source: CDHS/OA

DISCUSSION

The present study determined how long clients stay in ADAP and the seven-year cost of their drugs. These are important questions to answer for future budget projections in light of diminishing funds for continued program growth and support. Three measures of length of stay were used to provide a complete and clear picture of clients' use of ADAP.

Using the enrollment method, the traditional way of measuring length of stay, clients were enrolled and served in ADAP for a mean of two years and eight months over the seven-year period of the program. The average cost per client was $20,028 (FY 1997-98 to FY 2003-04). The estimated historic cost per client was $23,315 (October 1987 to FY 2003-04).

Using the access method, a practical way of measuring length of stay, clients were served for a mean of one year and ten months. When taken into consideration with the mean of two years and five months from the dispense method, this indicated a gap in service of seven months. Possible reasons may include changing medications, pill accumulation, vacation supplies, non-adherence, and treatment "holidays." Another possibility was that another payer source was used (private insurance, Medicaid, or Veteran's Administration). Because clients only cost the program when they were accessing prescriptions, the access and dispense methods were important to examine.

For all measures, the median length of stay was six to nine months less than its corresponding mean length of stay. Thus, a disproportionate number of clients had stays at the lower end of the scale. This statistic was further illustrated when examining client access years and access months. Both showed the largest number of clients had

few years or months in the program. For example, nearly ten percent of all clients accessed the program for only one month.

There were 90 percent continuous clients and 10 percent non-continuous clients over the seven-year period meaning that the majority of clients accessed drugs in consecutive years with no gaps in service. Thus, once a client left ADAP, they usually did not come back to the program.

Finally, two-thirds of all clients received their first prescription within 30 days of their enrollment date. This demonstrated ADAP's efficiency in serving its client population.

Throughout this study, it was emphasized that clients were enrolled and served in the program. This distinction was made to separate these clients from those who enrolled and did not access a prescription drug. This is important because clients who only enroll occupy a slot in the program should there ever be an ADAP waiting list in California. Future research will track the number of enrolled clients, identify which ones access the program, and determine the rate at which they leave the program. A simulation model will be used to estimate how many clients will be put on the waiting list and determine when clients who enroll and do not access a drug should be disenrolled. Also, future research will examine why clients leave ADAP and where they go, such as Medi-Cal, back to work, etc.